Application No.: 09/680,156,   Attorney Docket No.: EMC2-080PUS

REMARKS/ARGUMENTS

Reconsideration and re-examination are hereby requested.

An Information Disclosure Statement was *electronically* filed December 16, 2004 and has not been considered by the Examiner, copy enclosed.

An Information Disclosure Statement was filed May 18, 2004 and has not been considered by the Examiner, copy enclosed.

The paragraph on page 27, beginning at line 19 was amended to be consistent with the statement in the paragraph on page 26, beginning at line 29:

There is a mask vector stored in **a register of register section 420** (FIG. 7) in the message engine (ME) 315 which identifies director or directors which may be not available to use (e.g. a defective director or a director not in the system at that time), Step 524, 525, for a uni-cast transmission). If the message engine (ME) 315 state machine 410 indicates that the director is available by **examining the transmit vector mask (FIG. 11F) stored in register 420...** (emphasis added)

where the amended paragraph on page 27, beginning at line 19 now states:

Referring to FIG. 12, the message read operation is described. Thus, in Step 600 the director waits for a message. When a message is received, the message engine (ME) 315 state machine 410 receives the packet (Step 602). The state machine 410 checks the receive bit vector mask (FIG. 11) stored in one of the registers in register section 420 against the source address of the packet (Step 604). If the state machine 410 determines that the message is from an improper source (i.e., a faulty director as indicated in the mask, FIG. 11F, for example), the packet is discarded (Step 606).

It is respectfully submitted that the amendments now makes the two paragraphs consistent with one another.

Claim 3 has been amended to correct a typographical error and also to correct the lack of antecedent basses for "the data transfer section" and the "cache memory".

Claims 1-5 stand rejected under 35 USC 103 (a) as being unpatentable over

6

Application No.: 09/680,156   Attorney Docket No.: EMC2-080PUS

Nakayama et al (U. S. Patent No. 5,920,893) in view of Noguchi, in further view of Hashemi.

Applicant wished to make the following points:

1. Applicant has a global memory for storing user data. The global memory is accessible by all directors. Because all directors have access to the global memory for user data there is a requirement for arbitration to decide which one of multiple requesting directors has access to the memory. This arbitration for the memory by the plurality of directors *reduces system bandwidth.*

2. With applicant's system of FIG. 2 and the prior system in FIG. 1, the control of the data between the host computer and disk drives is by processors in the directors. Thus, it is the plurality of directors that control the flow of the data between the host computer and disk drives. The control in the applicant's system of FIG. 2 and the prior system in FIG. 1 is by messages which pass between the directors. In the prior system described in connection with FIG. 1 both the messages and user data went to the global memory. The Applicants recognized that the **bandwidth of the system of FIG. 1 could be increased by having the** message *BY-PASS* the global memory as described in FIG. 2. That is, the bandwidth of the system of FIG. 1 was increased because the messaging did not require the arbitration for access to the global memory as the data did for access to such memory. Thus, while the user data continued to pass to the global memory, *the bandwidth was increased by having the messages BY-PASS the global memory.*

3. The *messages* which pass between the plurality of directors *control the data passing through the global memory which is coupled to the plurality of directors. These messages pass through a NETWORK coupled to the all the directors.*

4. The *messages control the data* passing through the global memory.

5. The messages are packets and the network is a packet switching network.

6. The method used to transmit the packets through the network determines in receiving one, or ones, the receiving of the directors whether the received one of the messages is from a proper, or an *improper transmitting* one of the directors. More particularly:

Referring to page 26, beginning at line 29:

7

Application No.: 09/680,156   Attorney Docket No.: EMC2-080PUS

There is a mask vector stored in a register of register section 420 (FIG. 7) in the message engine (ME) 315 which identifies director or directors which may be not available to use (e.g. a defective director or a director not in the system at that time)

Referring to page 27, beginning at line 19, as amended:

Referring to FIG. 12, the message read operation is described. Thus, in Step 600 the director waits for a message. *When a message is received, the message engine (ME) 315 state machine 410 receives the packet (Step 602). The state machine 410 checks the receive bit vector mask (FIG. 11) stored in one of the registers in register section 420 against the source address of the packet (Step 604). If the state machine 410 determines that the message is from an improper source (i.e., a faulty director as indicated in the mask, FIG. 11F, for example), the packet is discarded (Step 606). On the other hand, if the state machine 410 determines that the packet is from a proper or valid director (i.e., source), the message engine (ME) 315 de-encapsulates the message from the packet (Step 608) in de-packetizer 428D.* (emphasis adeded)

The Examiner acknowledges that Nakayma does not teach that the messages by-pass the data transfer section. The Examiner refers to Noguchi as teaching that messages by-pass a data transfer section and refers to column 7, lines 31-34 and lines 41-43, below.

(3) The bus installed in the switch for the transfer of data is implemented as an exclusive packet bus for *packet data* transfer and an exclusive message bus for *non-packet data* transfer. It has been customary to execute packet assembly/disassembly processing in a terminal line control unit so as to packetize all of the non-packet data without exception. Hence, only a packet bus for packet data transfer has been available for data transfer in a switch. Such a prior art switching procedure is time-consuming and increases the transmission delay time. The present invention with the two independent buses cuts down the switching time and thereby the transmission delay time.

Thus, Noguchi is describing the use of a packet bus for *packet DATA* and a *non-packet* bus for non-packet *DATA*. Thus, with Noguchi, there are two types of *DATA*; packet *DATA* and non-packet *DATA.* Noguchi, describes that instead of packetizing non-packetized *DATA*, Noguchi uses a two bus arrangement; one for packet *DATA* and the other for non-packet *DATA*. Noguchi is dealing with two types of DATA.

Nowhere is there any suggestion that messages used to control data passing through a

8

Application No.: 09/680,156   Attorney Docket No.: EMC2-080PUS

global memory be transmitted between the directors through a network, let alone a packet switching network. Noguchi has two independent sources of data; applicant, on the other hand, has data which passes through a memory and which is controlled by messages that pass through a network and which by-pass the memory. *Nothing in the art suggests separating the data and the messages used to control the flow of such data through a memory by-passing such messages through a network, let alone a packet switching network*.

Thus, with applicant's method, messages pass to the directors through a message network and by-pass the data transfer section while data passes through the data transfer section. This *separation* between the messages which pass through the *message network to the directors* and *by-pass the data transfer section from the data* which *such messages control* as such data passes through the *data transfer section* is not suggested or recognized in Noguchi.

It is respectfully submitted that nothing in the material referenced above describes or suggest having "messages by-pass the data transfer section" or messages by-passing a "cache memory" coupled to a plurality of directors as set forth in the claims as noted more particularly below: There is no recognition in Noguchi that while data passes through the data transfer section the message by-pass the data transfer section or messages by-passing a "cache memory" coupled to a plurality of directors as set forth in the claims as noted more particularly below:

The Examiner points to Hashemi as teaching determining whether the message is from a proper, or improper one of the transmitting directors. The Examiner points to column 2, lines 56-64; column 3, lines 24-31; and column 5, lines 29-35 and 52-57, below:

Column 3, lines 24-41 states:

(c) The address could be corrupted and a wrong location on the slave module
would be readout or written to and hence, the master or the slave module
could be corrupted,
(d) A control signal could be corrupted which would cause duplicated words
or missed words of data to be transferred to the other module's memory.

Applicant fails to see where this material describes: Determining whether the

9

Application No.: 09/680,156   Attorney Docket No.: EMC2-080PUS

message is from a *proper, or improper one of the transmitting* directors.

> Column 3, lines 24-31 states:
> Another feature of the disclosed system is that the slave module will hold the data written to its internal memory until the LRC (longitudinal error word) is verified as a "good" transmission. Then the slave module will update its memory with this data. Otherwise, the slave module will discard the data without updating its memory and will then report "a bad transmission" to the master module. This particular operation will then save the slave's memory from being corrupted.

Applicant fails to see where this material describes: Determining whether the message is from a *proper, or improper one of the transmitting* directors.

> Column 5, lines 29-35 states:
>
> If the address and/or data in the "connect" phase/data phase is corrupted, then it will be seen that LRC values of the master's circuit 47 and slave's LRC circuit 47 do not match.

Applicant fails to see where this material describes: Determining whether the message is from *a proper, or improper one of the transmitting* directors.

> Column 5, lines 29-35 and 52-57 states:
>
> Thus any digital module that is connected to or disconnected from the system bus during live operation of the network will not corrupt the addresses and message data being transmitted on the system bus, since any errors will be detected by the LRC units in the receiving modules.

Applicant fails to see where this material describes: Determining whether the message is from *a proper, or improper one of the transmitting* directors.

> ***Referring now to the claims***:
>
> Claim 1 points out that
>
> a data transfer section is coupled to the plurality of first directors and second directors;
>
> a messaging network is coupled to the plurality of first directors and the plurality of second directors, such first and second directors controlling data transfer between the host computer and the bank of disk drives in response to messages passing between the directors

10

Application No.: 09/680,156   Attorney Docket No.: EMC2-080PUS

through the messaging network as such data passes through the data transfer section;

transmitting such one of the messages to said receiving one, or ones, of the directors through the messaging network with such one of the *messages by-passing the data transfer section;* and

determining in such receiving one, or ones, the receiving directors whether the received one of the messages *is from a proper, or an improper TRANSMITTING one of the directors*

It is respectfully submitted that neither cited reference taken singly or in combination suggest transmitting such one of messages used to control data transfer between the host computer and the bank of disk drives in response to messages passing between the directors through the *messaging network* with such one of the *messages by-passing the data transfer section in a system where the data transfer section is coupled to the plurality of first directors and second directors*. Applicant respectfully requests the Examiner to identify a "data transfer section" in Noguchi that *is coupled to the plurality of first directors and second directors. More particularly, Applicant respectfully requests the Examiner to identify a "data transfer section" in Noguchi.*

Further, the step of determining in such receiving one, or ones, the receiving directors whether the received one of the messages *is from a proper, or an improper TRANSMITTING one of the directors does not appear to be described in* Hashemi.

Claim 3 points out that the method includes:

passing data between the plurality of first directors and second directors **through a** *cache memory* **coupled to the plurality of first directors and second directors;**

passing messages through a messaging *network coupled to the plurality of first directors and the plurality of second directors*, such first and second directors *controlling data transfer* between the host computer and the bank of disk drives in response to the *messages passing* between the directors through *the messaging network* as such *data passes* through *cache memory,*

transmitting such one of the messages to said receiving one, or ones, of the directors

11

Application No.: 09/680,156   Attorney Docket No.: EMC2-080PUS

through the messaging network with such one of the messages *by-passing the cache memory,* and

determining in such receiving one, or ones, the receiving directors whether the received one of the messages *is from a proper, or an improper TRANSMITTING one of the directors.*

It is respectfully submitted that such method including *controlling data transfer* between the host computer and the bank of disk drives in response to the *messages passing* between the directors through a *messaging network* as such *data passes* through a *cache memory* **coupled to the plurality of first directors and second directors with the** *messages by-passing the cache memory* is not described or suggested in Noguchi. **The** *separation* **between the messages which pass through the** *message network to the directors* **and** *by-pass the data transfer* **section** *from the data* **which** *such messages control* **as such data passes** through the *data transfer section* **is not suggested or recognized in Noguchi.**
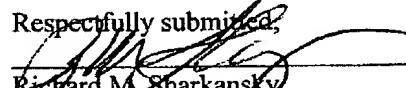
Further, the step of determining in such receiving one, or ones, the receiving directors whether the received one of the messages *is from a proper, or an improper TRANSMITTING one of the directors does not appear to be described in* Hashemi.

In the event any additional fee is required, please charge such amount to Patent and Trademark Office Deposit Account No. 05-0889.

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Date

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12